MANPRINT IN THE ACQUISITION PROCESS

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MANPRINT Practitioner’s Workshop
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MY EXPERIENCE

MANPOWER & PERSONNEL INTEGRATION

Protecting the Soldier & Optimizing System Performance

MANPRINT

- Ensures that soldier and unit needs are considered throughout system acquisition and life cycle.
- The Army's comprehensive program for improving the effectiveness of system performance at minimum costs for personnel, maintenance and repairs throughout their entire life cycle.
- Cost-effective, structured approach to increasing system performance

MANPRINT is NOT focused on creature comforts, soldier happiness, niceties or making soldiers feel "warm and fuzzy" about themselves and their equipment

7 domains:

- Manpower
- Personnel
- Training
- Human Factors
- System Safety
- Health Hazards
- Soldier Survivability

LATEST DOD 5000-SERIES HIGHLIGHTS

- Retains basic acquisition model (moves Milestone A)
- Emphasizes evolutionary acquisition and cost realism
- Establishes Information Technology Acquisition Board (ITAB)
  - Previous MAISRC – DAB counterpart for MAIS programs)
- Breaks Concept & Tech Development (CTD) work into Concept Refinement & Technology Development
- Replaces Interim Progress Review with Design Readiness Review
- Provides “special interest” for ACAT I designation
- Cancels DoD 5000.2-R. Replaced by Interim Guidebook

JOINT CAPABILITIES INTEGRATION AND DEVELOPMENT SYSTEMS (JCIDS) SUMMARY OF CHANGES

- **Enhance methodology to identify and describe capabilities gaps**

- **Mandate broader review of capability proposals**

- **Engage the acquisition community early**

- **Better define non-materiel aspects of materiel solutions**

- **Prioritize capability gaps and proposals**

- **Improved coordination with other**

MANPRINT AND AR 70-1

The MANPRINT process is an integral part of the acquisition process and is stressed throughout AR 70-1:

- **“MANPRINT/HSI must be fully addressed throughout the system acquisition process.”**

- **“MANPRINT/HSI analyses must be conducted as an integral part of the systems engineering process to ensure MANPRINT/HSI requirements are integrated into the system design,… “**

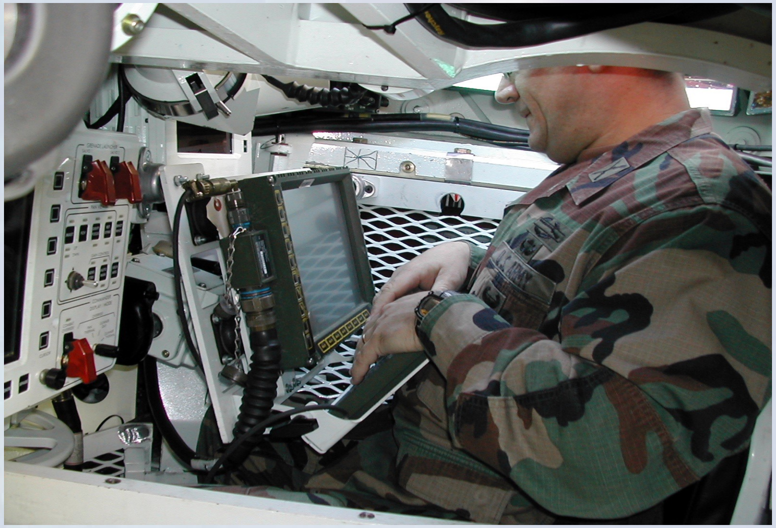
MANPRINT AND STRYKER

- Example:
  - Hardware changes made to the Stryker Mobile Gun System crew station during the human factors engineeri

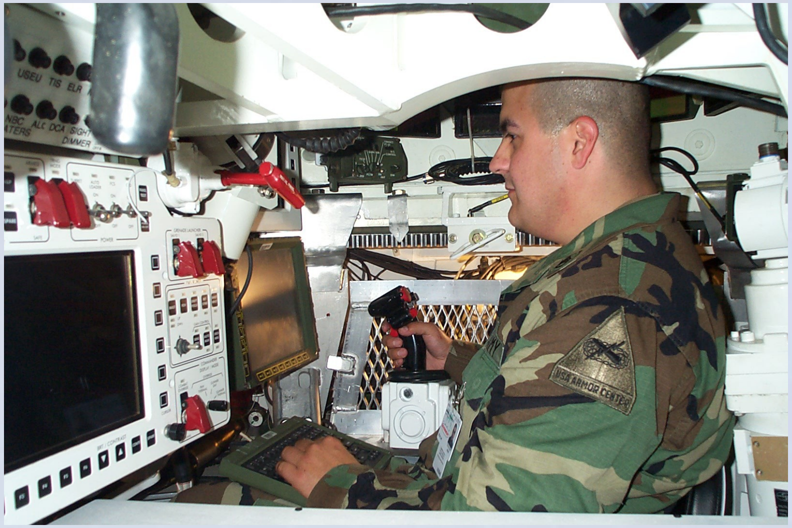
3).

- Pre-HFE effort, the MGS could facilitate approximately a 50th percentile male.
- Now the MGS could facilitate approximately a 95th percentile male.

MANPRINT AND STRYKER



OLD STATION



NEW STATION

- Using human factor engineering the Commander’s station allows for more conducive workspace for the operator.

MANPRINT AND HIMARS

PFRMS PMO used MANPRINT to develop and field HIMARS in record time while:

- shortening acquisition process
- enhancing soldier design needs
- reducing Life cycle costs
- optimizing system performance

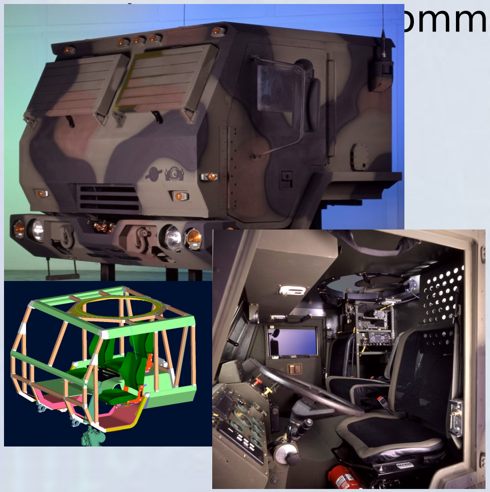
MANPRINT Success Story

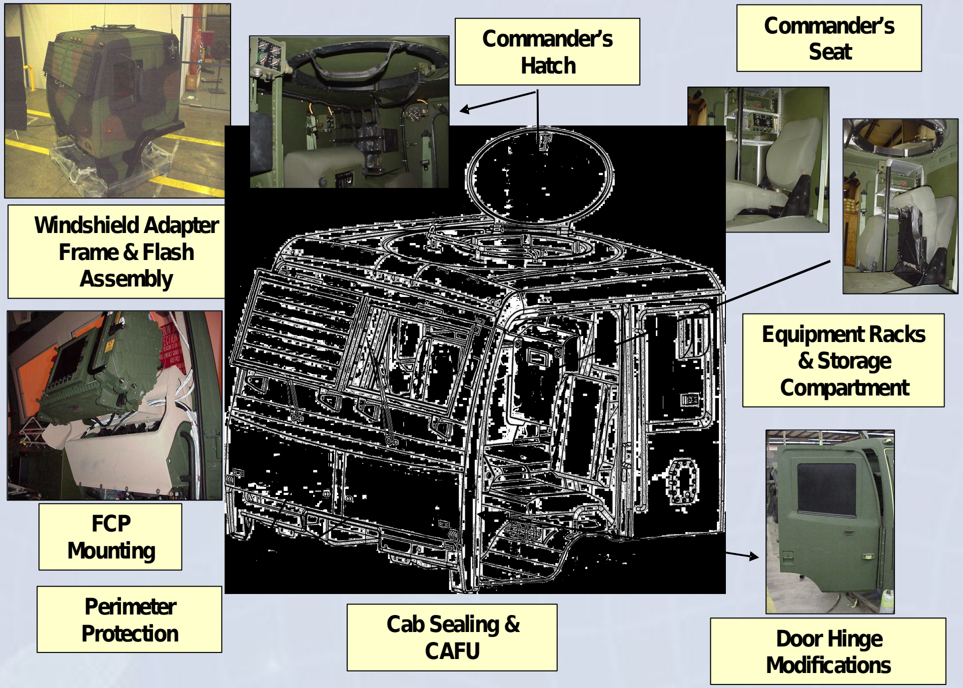
- Common Automatic Reloader
- Crew Cab improvements
- Common LRUs
- Low Cost Fire Control Panel

HIMARS
CREW CAB IMPROVEMENTS

ACTD Prototype Cab

- Enhanced FMTV cab
- No frills amenities
- Repositioned Gunner & Crew Chief
  (More room for Gunner, Chief has
  ommander's





Production Cab (Block I)

- Increased Crew protection from launch debris and bla
- New seating, storage, and lighting
- Crew weapons mounts
- Articulating arm/crew served weapons mount

Future Cab (Block II)

- Ballistic Crew protection
- Improved Environmental Control Systems
- New cab layout & expanded C2 & Situational Awareness

HIMARS FIRE CONTROL SYSTEM IMPROVEMENTS

Prototype Launcher

(M270 FCS w/IPDS)

- Used obsolete technology
- Increased O&S costs

EMD Launchers

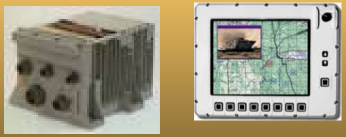
(Improved Fire Control System (IFCS))

- Provided growth for Future Munitions
- State-of-the-art technology
- Added Global Positioning System

Production Launchers

(Low Cost Fire Control Panel (LCFCP))

- Improved/faster processing & memory
- JTA-A Compliant
- Ergonometric Design (Flat panel, thumb driven)



Future FRP Launchers

(Universal Fire Control Panel (UFCS))

- Advanced integrated core processor
- Reduced number of executive processors
- FCS architecture COTS based
- Reduced number of LRUs to maintain

FOX VEHICLE REDESIGN

Background

- Under the XM931 system improvement program, the US Army reduced the number of crew from four to three.
- Initial operational test & evaluation of the new vehicle indicated that it was “unsuitable and ineffective”.

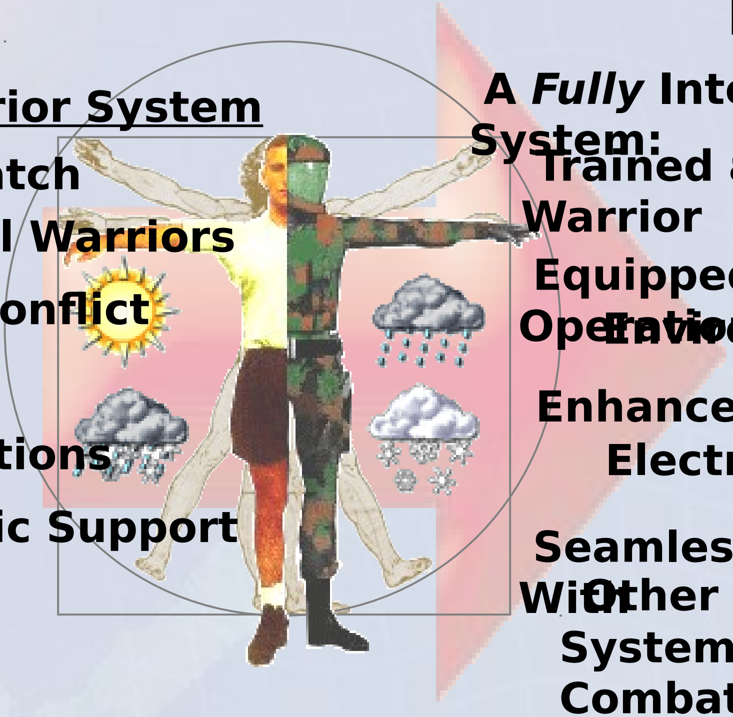
Approach

- Task network modeling (workload evaluation) and human figure modeling (geometry, layout and accommodation evaluation).

Benefit

- Physical & workload modeling overcame problems with the design

THE WARRIOR SYSTEM



Vision

A Fully **Integrated Warrior System**
Enhancing **Combat Overmatch**
Tailorable for All Warriors
In **Full Spectrum Conflict**
During **Joint**
and **Coalition Operations**
Within **A System Centric Support**
Architecture

Definition

A *Fully* Integrated Warrior System:

Trained and Ready Warrior

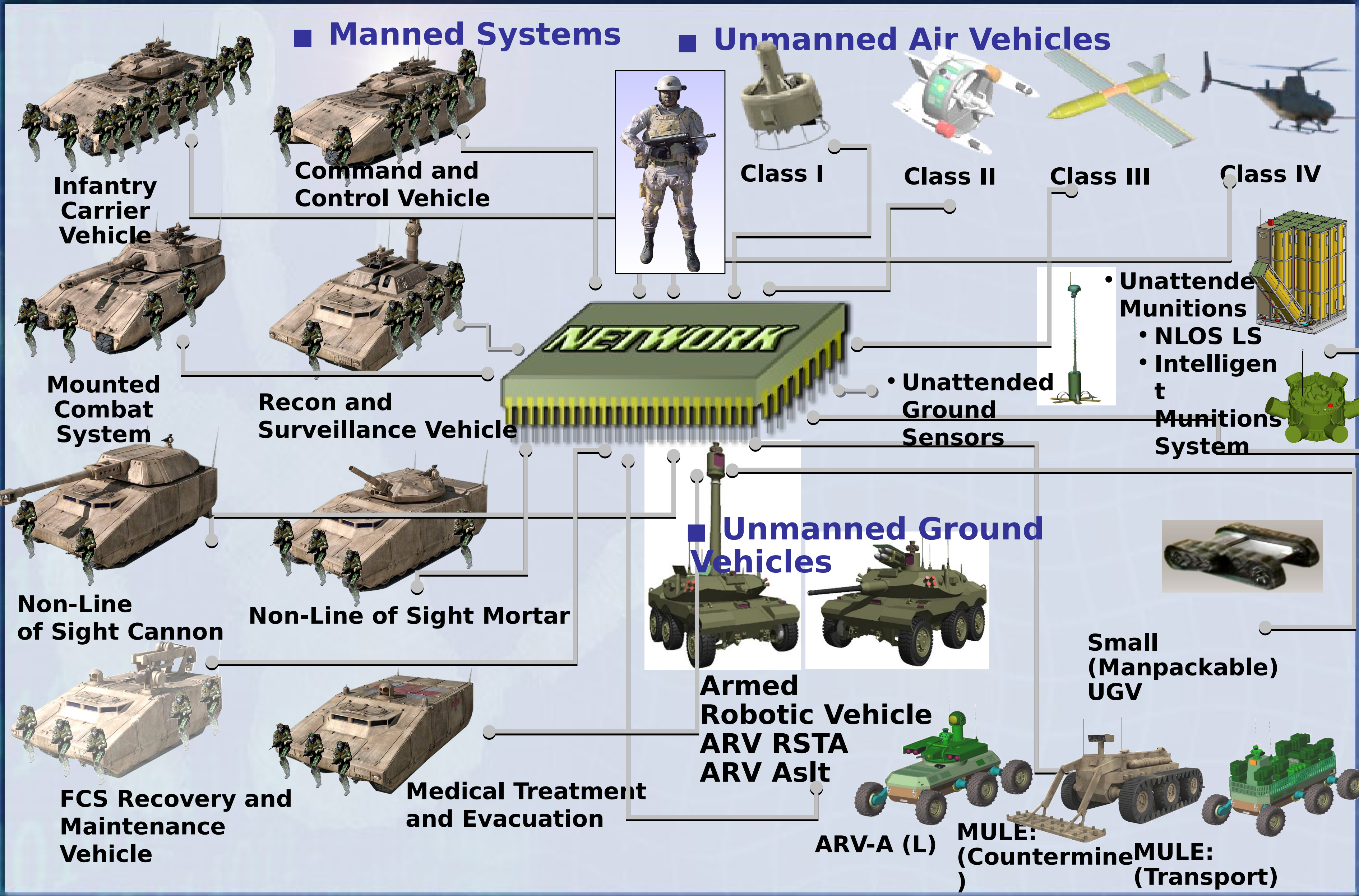
Equipped For Operational Environments

Enhance Lethality Through Electronic Battlefield

Seamlessly Integrated With Other Warriors their Weapon Systems and the Future Combat System

A Focused Effort On The Warrior As A System

FUTURE COMBAT SYSTEMS



■ Manned Systems

Infantry Carrier Vehicle

Command and Control Vehicle

Mounted Combat System

Recon and Surveillance Vehicle

Non-Line of Sight Cannon

Non-Line of Sight Mortar

FCS Recovery and Maintenance Vehicle

Medical Treatment and Evacuation

■ Unmanned Air Vehicles

Class I

Class II

Class III

Class IV

- Unattende Munitions
  - NLOS LS
  - Intelligent Munitions System
- Unattended Ground Sensors

■ Unmanned Ground Vehicles

Armed Robotic Vehicle
ARV RSTA
ARV Aslt

ARV-A (L)

Small (Manpackable) UGV

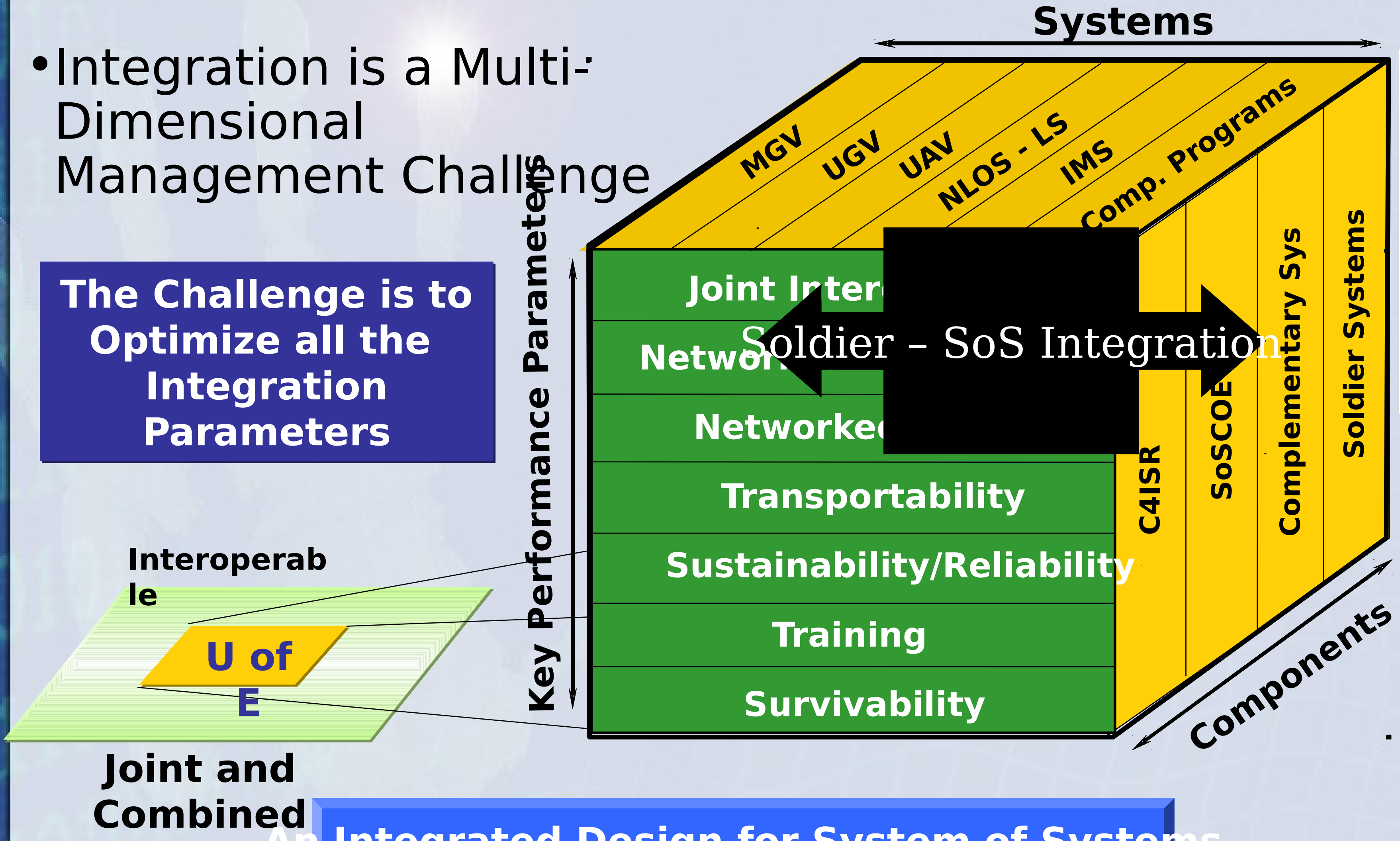
MULE: (Countermine)

MULE: (Transport)

FCS SYSTEM OF SYSTEMS INTEGRATION

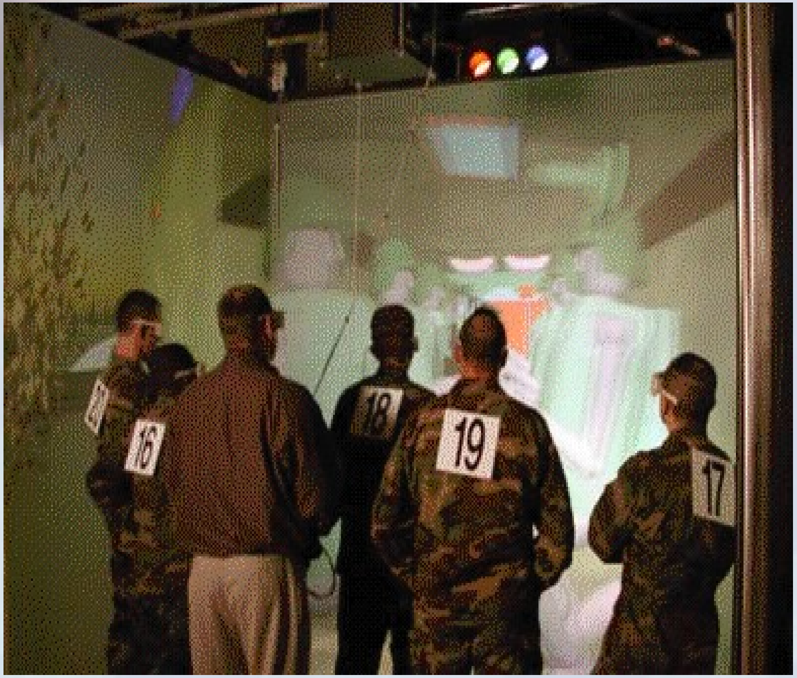
- Integration is a Multi-Dimensional Management Challenge

The Challenge is to Optimize all the Integration Parameters



An Integrated Design for System of Systems

CAVE AUTOMATED VIRTUAL ENVIRONMENT (CAVE)



MWTB CAVE Capabilities

CAVE Environment	**1**
Link to TARDEC	**1**
Virtual Gloves	**Pending**

The CAVE allows soldiers to change design configurations and layouts of combat vehicles in 3D Virtual Environment.

FCS SOLDIER/SYSTEM OF SYSTEMS CHALLENGES

- **Operate a larger number of systems per soldier with 95% reliability and accuracy**
- **Learn and use many new types of systems**
- **Manage systems generating far greater volumes of information at an exponentially faster pace**
- **Perform more cognitively intensive functions while vehicles are in constant motion**
- **Maintain more systems with fewer maintainers with less support structure, over bigger area**
- **Isolate, remove, and repair 80% of all field level failures**
- **Operate over much greater distances**
- **Depend on and use embedded training to acquire and retain new skill sets**
- **Acquire greater combined arms skills at lower echelons and possibly new combinations of skills**
- **Place much greater trust in networks to stay alive**
- **Perform all duties without degradation over 3 days of intensive combat during a wide range of environmental conditions immediately after deploying over a 4 day period**

SUMMARY

- **MANPRINT is everyone's responsibility -**
  - **User**
  - **Material Developer**
  - **Tester**

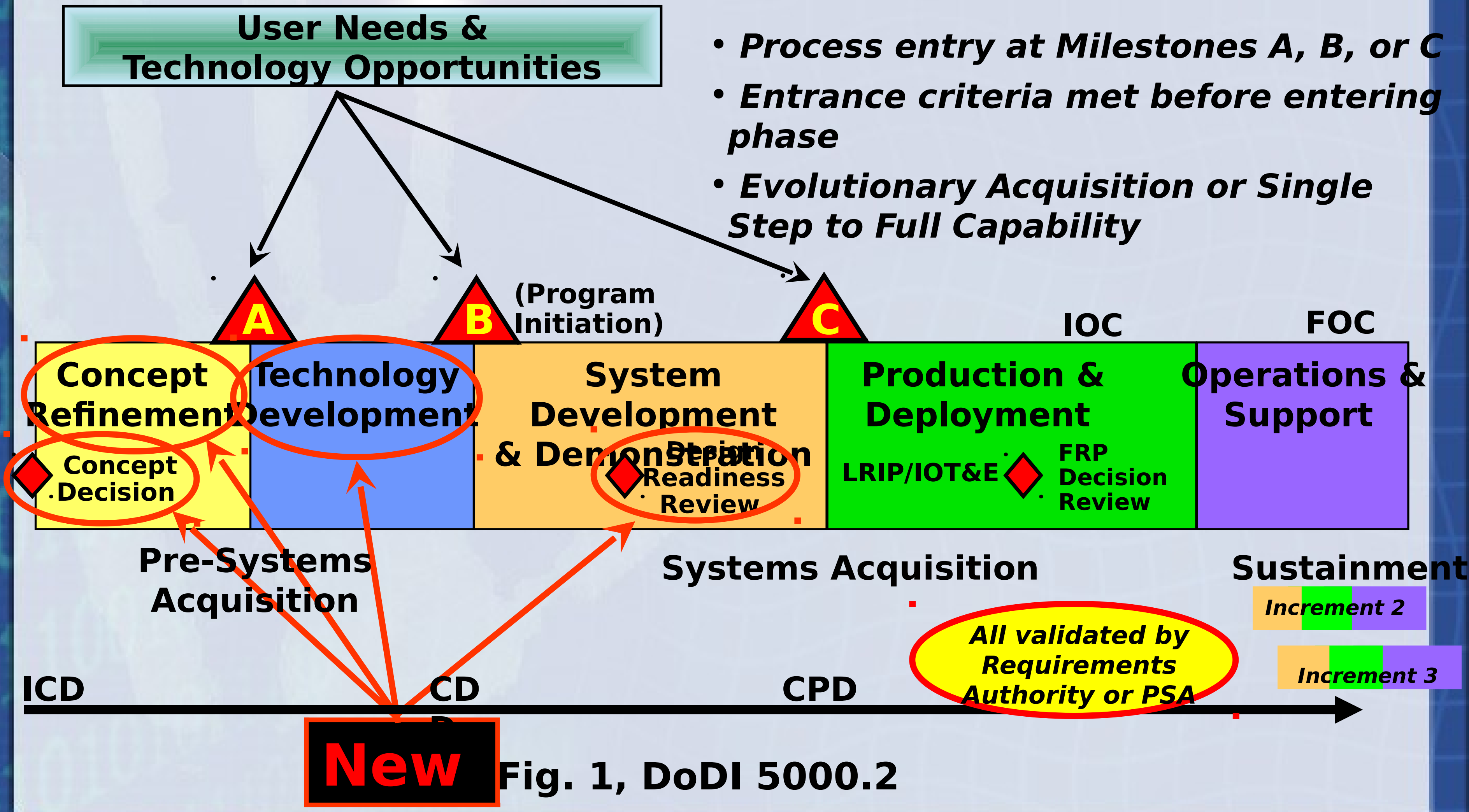
Goal

In today's environment we all must ensure that equipment enhances our Soldier's ability to be lethal and effective whenever and wherever duty calls!

BACKUPS

THE DEFENSE ACQUISITION MODEL

- *Process entry at Milestones A, B, or C*
- *Entrance criteria met before entering phase*
- *Evolutionary Acquisition or Single Step to Full Capability*



User Needs & Technology Opportunities

A

B (Program Initiation)

C

IOC

FOC

Concept Refinement

Concept Decision

Technology Development

System Development & Demonstration

Design Readiness Review

Production & Deployment

LRIP/IOT&E

FRP Decision Review

Operations & Support

Pre-Systems Acquisition

Systems Acquisition

Sustainment

Increment 2

Increment 3

All validated by Requirements Authority or PSA

ICD

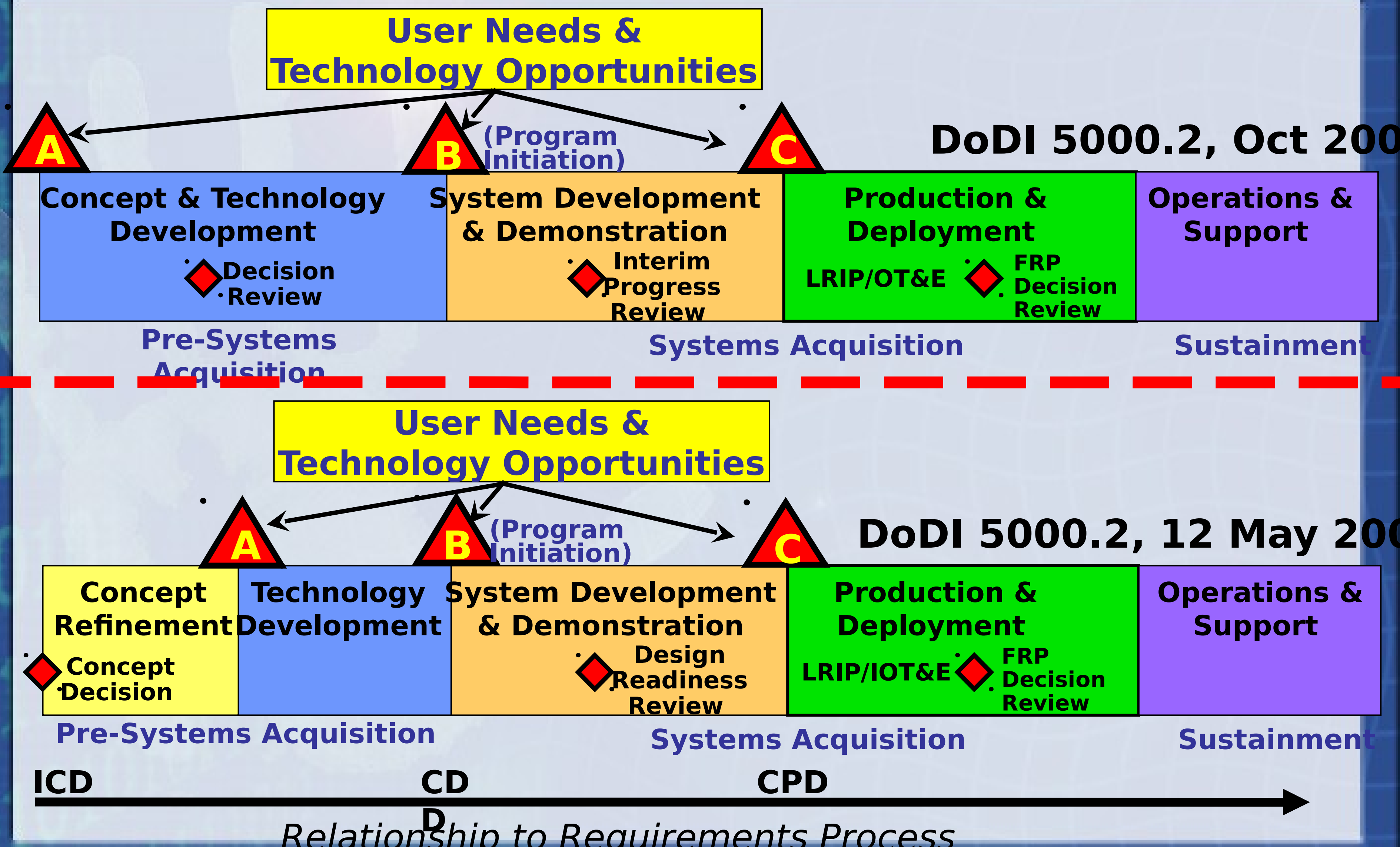
CDD

CPD

New

Fig. 1, DoDI 5000.2

DEFENSE ACQUISITION YESTERDAY AND TODAY



User Needs & Technology Opportunities

A

B

(Program Initiation)

C

DoDI 5000.2, Oct 200

Concept & Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Decision Review	Interim Progress Review	LRIP/OT&E FRP Decision Review	

Pre-Systems Acquisition

Systems Acquisition

Sustainment

User Needs & Technology Opportunities

A

B

(Program Initiation)

C

DoDI 5000.2, 12 May 200

Concept Refinement	Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Concept Decision		Design Readiness Review	LRIP/IOT&E FRP Decision Review	

Pre-Systems Acquisition

Systems Acquisition

Sustainment

ICD

CDD

CPD

Relationship to Requirements Process